

We claim:

1. A crosslinkable, flame retardant polyolefin insulation composition having improved abrasion resistance comprising:
  - 5 (a) 30 to 90 weight percent, based on the weight of the total composition, high density silane-containing polyethylene base resin selected from the group consisting of:
    - (i) a blend of a bimodal high density polyethylene resin having a density of 0.940 to 0.960 g/cm<sup>3</sup> with an ethylene-silane copolymer and,
    - 10 (ii) a bimodal high density polyethylene resin having a density of 0.940 to 0.960 g/cm<sup>3</sup> grafted with a silane monomer;
  - (b) 5 to 70 weight percent, based on the weight of the total composition, flame retardant; and
  - (c) 0.01 to 1 weight percent, based on the weight of the total composition, silanol condensation catalyst.
2. The composition of Claim 1 wherein the high density silane-containing polyethylene base resin is a blend of a bimodal high density polyethylene resin and a copolymer of ethylene with 0.1 to 20 weight percent vinyltrialkoxysilane of the 20 formula  $H_2C = CHSi(OR)_3$  where R is a C<sub>1-4</sub> alkyl group, the weight ratio of said bimodal high density polyethylene resin to said ethylene-vinyltrialkoxysilane copolymer ranging from 4:1 to 1:4.
3. The composition of Claim 2 wherein the bimodal high density polyethylene 25 resin is a copolymer of ethylene and 2 to 15 weight percent C<sub>3-8</sub>  $\alpha$ -olefin.
4. The composition of Claim 3 wherein the bimodal high density polyethylene resin has a density from 0.942 to 0.955 g/cm<sup>3</sup>.
- 30 5. The composition of Claim 4 wherein the bimodal high density polyethylene resin is a copolymer of ethylene with 2 to 10 weight percent hexene-1.

6. The composition of Claim 3 wherein the bimodal high density polyethylene resin has a melt flow ratio from 50 to 300 and ratio of weight average molecular weight to number average molecular weight from 15 to 30.

5 7. The composition of Claim 2 wherein the ethylene-vinyltrialkoxysilane copolymer is a copolymer of ethylene with 0.25 to 7.5 weight percent vinyltrimethoxysilane or vinyltriethoxysilane and has a melt index of 0.01 to 20 g/10 min.

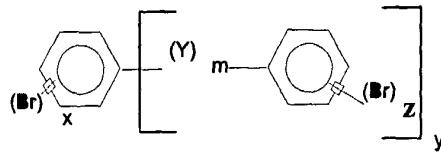
10 8. The composition of Claim 7 wherein the ethylene-vinyltrialkoxysilane copolymer is a copolymer of ethylene and 1 to 5 weight percent vinyltrimethoxysilane.

15 9. The composition of Claim 2 wherein the weight ratio of the bimodal high density polyethylene resin to ethylene-vinyltrialkoxysilane copolymer is from 2:1 to 1:2.

10. The composition of Claim 1 wherein the high density silane-containing polyethylene base resin is a bimodal copolymer of ethylene and 2 to 15 weight percent C<sub>3-8</sub>  $\alpha$ -olefin having a density of 0.942 to 9.55 g/cm<sup>3</sup> grafted with 0.1 to 20 weight percent vinyltrialkoxysilane of the formula H<sub>2</sub>C = CHSi(OR)<sub>3</sub> where R is a C<sub>1-4</sub> alkyl group.

11. The composition of Claim 10 wherein the bimodal copolymer has a melt flow ratio from 50 to 300 and ratio of weight average molecular weight to number average molecular weight from 15 to 30 and the vinyltrialkoxysilane is vinyltrimethoxysilane or vinyltriethoxysilane grafted in an amount from 0.25 to 7.5 weight percent.

12. The composition of Claim of Claim 1 wherein the flame retardant is a brominated aromatic compound of the formula



wherein x is 3 to 6; z is 3 to 5; m is zero or 1; y is zero or 1; and Y is oxygen or a bivalent aliphatic radical of the formula (C<sub>n</sub>H<sub>2n</sub>) where n is an integer of 1 to 6 and the 5 silanol condensation catalyst is selected from the group consisting of organic bases, carboxylic acids and organometallic compounds.

13. The composition of Claim 12 wherein the flame retardant is a brominated aromatic compound and an inorganic synergist compound and the weight ratio of 10 brominated aromatic compound to inorganic synergist is from 1:1 to 5:1.

14. The composition of Claim 13 wherein the brominated aromatic compound is decabromodiphenyl ether or ethane-1,2-bis(pentabromophenyl).

15. The composition of Claim 12 wherein the silanol condensation catalyst is a tin 15 carboxylate.

16. The composition of Claim 12 wherein (a) is present from 40 to 85 weight percent, (b) is present from 10 to 55 weight percent and (c) is present from 0.025 to 20 0.75 weight percent.

17. The composition of Claim 16 additionally containing from 0.1 to 2 weight percent stabilizer, based on the weight of the total composition.

25 18. The composition of Claim 17 wherein the stabilizer is a hindered phenol or hindered phenol mixture and is present from 0.2 to 1.5 weight percent.